comprises one or more calibration algorithms for one or more analytes. This method comprises measuring absorbance of a quality control material with the apparatus to obtain a measurement, where the quality control material exhibits an absorbance spectra characterized as having a negative slope for a continuous spectral segment from about 5 nm to about 200 nm in length, and where the spectral segment includes a principal calibration wavelength for the one or more analytes. The method then involves calculating one or more concentration values from the measurement using the one or more calibration algorithms, followed by comparing the one or more concentration values with an assigned value given to the quality control material for each of the one or more analytes, and determining if there is a violation of a pre-established quality control rule. In this way one or more calibration algorithms of the apparatus may be monitored. A reagentless method for determining the concentration of one or more analytes in a sample in a spectrophotometric apparatus comprising at least one primary calibration algorithm is also disclosed. The present invention also provides to a method for selecting one or more substances as a quality control material for monitoring at least one primary calibration algorithm on a spectrophotometric apparatus. The present invention includes a quality control material for mimicking two or more analytes comprising, one

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